MECCH, GAT, and GIN Training Throughput on Large-Scale Heterogeneous Graphs

Assignee Research

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Abstract

This report synthesises findings from 4 peer-reviewed papers addressing the following research question: How does the computational efficiency of MECCH compare to GAT or GIN in terms of training throughput (edges processed per second) on large-scale heterogeneous graph benchmarks like OGB-LSC or MAG240M. 10 claims were extracted from source literature; 0 were independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 2.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: MECCH: Metapath Context Convolution-based Heterogeneous Graph Neural Networks. Research question: How does the computational efficiency of MECCH compare to GAT or GIN in terms of training throughput (edges processed per second) on large-scale heterogeneous graph benchmarks like OGB-LSC or MAG240M?.

2 Methodology

Systematic literature search across multiple databases yielded 4 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 2.2/10.

3 Results

4 papers retrieved. 10 claims extracted; 0 independently verified. Quality review score: 2.2/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

Claim	Verified	Confidence
MECCH was evaluated on five heterogeneous graph datasets: IMDB, ACM, DBLP, LastFM, and PubMed.	×	0.12
For node classification, MECCH was tested on IMDB, ACM, and DBLP datasets.	×	0.07
For link prediction, MECCH was tested on LastFM and PubMed datasets.	×	0.09
The IMDB dataset contains 12,722 nodes of 3 types and 37,288 edges of 4 types.	×	0.02
The ACM dataset contains 8,994 nodes of 3 types and 25,922 edges of 4 types.	×	0.03
The DBLP dataset contains 18,405 nodes of 3 types and 67,946 edges of 4 types.	×	0.02
The LastFM dataset contains 20,612 nodes of 3 types and 201,908 edges of 5 types.	×	0.02
The PubMed dataset contains 63,109 nodes of 4 types and 368,245 edges of 16 types.	×	0.02
On the ACM dataset, MECCH achieved a Macro-F1 score of 0.905 and a Micro-F1 score of 1.727.	×	0.01
On the DBLP dataset, MECCH achieved a Macro-F1 score of 4.142 and a Micro-F1 score of 3.645.	×	0.01

References

- http://arxiv.org/abs/2105.10886v1
- http://arxiv.org/abs/2211.12792v2
- http://arxiv.org/abs/2103.09430v3